UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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NOV 17 2014

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Commissioner
Virginia Department of Transportation
1401 East Broad Street
Richmond, Virginia 23219

Ms. Irene Rico
Division Administrator
Federal Highway Administration
400 North 8th Street, Suite 750
Richmond, Virginia 23219-4825

Colonel Paul B. Olsen, P.E.
Commander
U.S. Army Corps of Engineers, Norfolk District
803 Front Street
Norfolk, Virginia 23510

Re: U.S. Route 460 Draft Supplemental Environmental Impact Statement and Draft Section 4(F) Evaluation, Virginia, September 2014 (CEQ# 20140284)

Dear Mr. Kilpatrick, Ms. Rico, and Col. Olsen:

In accordance with the National Environmental Policy Act (NEPA) of 1969, Section 309 of the Clean Air Act and the Council on Environmental Quality regulations implementing NEPA (40 CFR 1500-1508), the U.S. Environmental Agency (EPA) has reviewed the Draft Supplemental Environmental Impact Statement (DSEIS) referenced above. The DSEIS has been prepared pursuant to 23 CFR §771.130 and 40 CFR §1502.9(c) because of new information and circumstances relevant to potentially significant environmental impacts to wetlands, streams, and water quality for the alternative selected in the earlier June 2008 Final Environmental Impact Statement (FEIS) and the September 2008 Record of Decision (ROD) for the U.S. Route 460 (Route 460) project. The previously selected preferred alternative was a new alignment parallel to the existing Route 460. The Virginia Department of Transportation (VDOT), in cooperation with the Federal Highway Administration (FHWA) and the United States Army Corps of Engineers (Corps) as joint lead federal agencies, is evaluating options for highway transportation improvements along the existing 55 mile Route 460 corridor between Interstate 295 (I-295) in Prince George County and Holland Road (Route 58) in the City of Suffolk, Virginia. The study

area encompasses portions of Prince George, Sussex, Surry, Southampton and Isle of Wight Counties, as well as the City of Suffolk.

The Route 460 corridor was studied for transportation improvements by VDOT and FHWA in 2005-2008 and an EIS was published. EPA issued comments for the DEIS in 2005, and the 2008 FEIS; additionally, letters were submitted by EPA for the 2012 FEIS Re-evaluation requested by FHWA and the Notice of Intent to prepare a SEIS in 2014. In all of these comments, EPA consistently suggested the on-alignment upgrade was potentially the least environmentally damaging practicable alternative (LEDPA) pursuant to the Clean Water Act (CWA) Section 404 permitting requirements and supported this upgrade alternative being carried forward as the preferred alternative. It should be noted that in each subsequent study, the amount of potential wetlands impacts associated with the proposed project have increased as additional resource information has been obtained.

The DSEIS considers five build alternatives, in addition to a No Build Alternative, that can generally be described as follows: Alternative 1 is a new alignment to the south of the existing Route 460 corridor (the previously preferred alternative). Alternative 2 has two variations (2North/2South) and follows the existing Route 460 corridor with bypasses around the six communities along the roadway; 2N bypasses the community of Windsor to the north whereas 2S bypasses Windsor to the south. Alternative 3 is a new alignment that parallels to the north of the existing roadway. Alternative 4 is the reconstruction of the existing roadway on alignment. Alternative 5 has two variations (5N/5S) similar to Alternative 2 and adds two additional lanes in each direction for a total of eight lanes. The No Build Alternative includes planned upgrades and improvements to the existing roadway. Decision makers have the opportunity to select the No Build Alternative, one of the Build Alternatives, or may consider a modified alternative that could combine different elements of the Build Alternatives studied in the DSEIS based on the relative need for improvements along the corridor. At this time, the preferred alternative has not been identified.

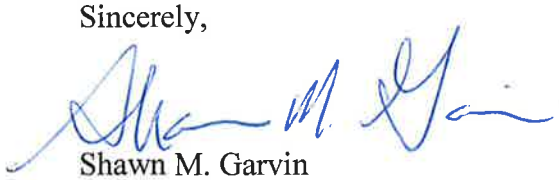
The total potential impacts of alternatives studied include up to 664 acres of wetlands and 79,120 linear feet of stream channel, representing one of the largest amount of aquatic resource impacts associated with a single project proposed in the mid-Atlantic region. The wetland resources that occur within the study area include high value and unique systems which are considered difficult to mitigate. Furthermore, a significant portion of the high value aquatic communities could be considered Aquatic Resources of National Importance. Losing the functions and values they perform within the wetland systems and complexes may lead to unacceptable adverse impacts to waters of the United States. In addition to the direct loss of the wetlands as a result of fill, the fragmentation of these wetlands would also represent an irreplaceable loss of these unique and valuable resources. Multiple ecological functions including flood storage, water quality enhancement, wildlife migration corridors, and feeding and breeding habitat would be degraded due to the loss and fragmentation of this habitat. It would also lead to numerous adverse effects to the diverse plant and animal communities present. Additionally the increase of impervious surface from the highway construction may lead to increased stormwater runoff, a further reduction in water quality, increased water temperatures, and additional degradation and destruction of aquatic and terrestrial habitats.

Under EPA's system for rating Environmental Impact Statements, EPA rates Alternative 1, 2N, 2S, 3, 5N and 5S as Environmentally Unsatisfactory, Insufficient Information (EU-2). This rating, which references environmentally objectionable impacts, is due to the potential extensive direct and indirect impacts to wetlands and stream channels. Additionally, these alternatives have a large amount of high quality wetland resources that are difficult if not impossible to mitigate. The direct and indirect impacts will likely negatively impact water quality and wildlife due to ecosystem and habitat fragmentation. EPA is rating the aforementioned alternatives similarly as they have similar impacts, both similarly situated and of similar quantity, ranging from 413 acres of wetland in Alternative 2N (or 372 with bridging) to 664 acres in Alternative 1 (or 613 acres with bridging). Information gaps include the limited evaluation of the environmental quality of the natural resources impacted by all alternatives. EPA rates Alternative 4, with up to 93 acres of wetland impact, as Environmental Concerns, Insufficient Information (EC-2). Although the quality of the aquatic resources within Alternative 4 range from high quality to significantly degraded and while impact to 93 acres is a substantial impact relative to other projects, EPA believes there are opportunities within this option to reduce the severity of impacts during design of road improvements and ability to identify compensatory mitigation as part of a mitigation package.

EPA understands the stated purpose and need for transportation improvements in the Route 460 corridor, and suggests the Final SEIS consider the comments provided in this letter, as well as the enclosure, to identify the preferred alternative. EPA recommends consideration of Alternative 4 or modifications to the existing roadway alignment, potentially including one or two bypasses to alleviate the flooding issues identified in the Purpose and Need statement. If this project progresses towards application for a Clean Water Act (CWA) Section 404 permit, it should be noted that only the LEDPA can be permitted under the CWA and the ability to address appropriate mitigation to replace lost resource functions and values would need to be demonstrated.

Thank you for the opportunity to review and comment on the DSEIS for the Route 460 Location Study, Prince George County to Suffolk. EPA had the opportunity to assist in the development of this document as a cooperating agency and was pleased that many of the comments and suggestions were incorporated. EPA looks forward to receiving and reviewing the additional NEPA documents and to the continued cooperation with FHWA, the Corps, and VDOT on this project. If the Final SEIS advances selection of an alternative that has been identified with an EU rating, please note that this project would be a candidate for referral to the Council on Environmental Quality for resolution. If you have any questions or comments regarding this letter, please feel free to contact myself or Mr. John R. Pomponio, Director, Environmental Assessment and Innovation Division, at 215-814-2702.

Sincerely,



Shawn M. Garvin
Regional Administrator

Enclosure

Enclosure

EPA Technical Comments
U.S. Route 460 DSEIS

The study area of the U.S. Route 460 project falls within three major watersheds: the Nansemond River, the Blackwater River, and the Nottoway River. The Nansemond River is a tributary of the James River and ultimately the Chesapeake Bay; whereas, the Blackwater River and the Nottoway River are tributaries to the Chowan River and, ultimately, the Albemarle Sound in North Carolina. The Chesapeake Bay and the Albemarle Sound are the largest and second largest estuaries in the U.S. The Sound was named an estuary of national significance by Congress in 1987. It is home to more than 75 fish and shellfish species and it supports billions of dollars in economic activity and ecosystem services to the Region. The Chesapeake Bay is the largest estuary in the United States and the third largest estuary in the world. Its watershed is home to approximately 17 million people and contributes significantly to the surrounding local and states economies. In 2009, President Obama signed the Executive Order 13508 recognizing the Chesapeake Bay as a national treasure and called on the federal agencies to work to protect and restore the Chesapeake Bay watershed.

The stated Purpose and Need (P&N) elements identified for this study area include addressing existing roadway deficiencies, improve safety, mobility, and evacuation needs, as well as sufficiently accommodating anticipated future freight traffic. In accordance with 40 CFR Section 230/10 (a)(3), the Corps has determined that the Basic Project Purpose is to address transportation needs along the Route 460 Corridor between Petersburg and Suffolk, Virginia.

The alternatives carried forward for study in the DSEIS include variations of the previously studied alternatives in the DEIS and FEIS. Six alternatives were examined in the study including five Build Alternatives that meet the P&N for the project as well as applicable design standards and the No Build Alternative. The No Build Alternative would include all planned transportation improvements in the study area that have been programmed for construction and adopted for implementation by 2040, as identified in the VDOT Six Year Improvement Program and the Long Range Transportation Plans developed by the Metropolitan Planning Organizations in the study area.

Impacts to Aquatic Resources

The potential direct impacts to wetlands and streams for each of the alternatives is summarized below (Table 1). Consideration of bridging in an effort to reduce impacts was also compared across alternatives and are included in the discussion.

Table 1. Summary of Impacts (Design Corridor)

	Without Bridging		With Bridging			
Alternative	Wetland (ac)/(%alignment Wetland)	Streams (lf)	Wetland (ac)	Stream (ac)	EPA Rating	Alternative Description
1	664 (23%)	79,120	613	70,869	EU-2	New tolled alignment to South
2N	413 (23%)	44,567	372	39,230	EU-2	Reconstruct existing w/ 6 bypasses
2S	460 (25%)	41,550	434	38,102	EU-2	Reconstruct existing w/ 6 bypasses
3	584 (20%)	68,441	516	58,191	EU-2	New tolled alignment to North
4	93 (9%)	21,297	91	20,216	EC-2	Upgrade of existing
5N	593 (21%)	73,421	551	67,794	EU-2	Reconstruct existing, plus 2 lanes w/6 bypasses
5S	638 (22%)	69,819	610	66,080	EU-2	Reconstruct existing, plus 2 lanes w/6 bypasses

Most of the alternatives propose extensive impacts to aquatic resources, of a scope and scale that is nearly unprecedented in the mid-Atlantic region for a comparable transportation project proposal. The impacts associated with most of the alternatives implicate direct loss of the resources themselves (habitat, hydrologic functions, etc), as well as adverse impacts to the quality of downstream waters, portions of which are already identified as impaired by the state, and for the larger watersheds. The potential direct loss of aquatic resources is not only a geographic loss but a functional loss. The potential loss of functions and values associated with the removal of up to 664 (or 613 with bridging) acres of wetlands and 79,120 linear feet of stream channel (70,869 with bridging) will permanently and adversely alter the local hydrological, geomorphological and biogeochemical processes, in addition to losing and fragmenting valuable wildlife habitat.

Through the placement of fill and subsequent highway construction, the flood attenuation, pollutant filtering, sediment trapping, and habitat functions of the directly impacted resources will be lost or greatly diminished. The functions and values related to the biogeochemical processes that would be impacted negatively include cycling of nutrients, removal of elements and compounds, retention of particulates and exportation of organic carbon. These functions contribute to overall wetland and water quality and support aquatic life in the

receiving streams. The lost resources would be replaced by impervious surfaces, which are known to cause increased pollutant loads, and increased storm flows, potentially degrading additional wetlands and streams.

The type of disruption or alteration of natural processes described above can contribute to changing the flow of energy through the local natural communities and sometimes altering the energy flow at the ecosystem level such that it changes the ability of the system to maintain itself. Some of the potential effects that may occur as a result of the disruption of hydrology in these systems and wetlands within the Design Corridors include changes to floodwater storage capacity and retention times, vegetative community composition and structure, nutrient cycling, and aquatic life movement.

The addition of fill and the resulting roadway directly impacts wetlands and can also have the indirect effect of changing hydrology both upstream and downstream of the culverts. More frequent upstream back-flooding along the roadway may be experienced, which can have the indirect effect of changing the vegetative community, shifting it to more flood-tolerant vegetative species. The additional culverts may also reduce flooding downstream and may block water flow into formerly braided channel stream swamp systems downstream, resulting in channelized flow and less frequent inundation. This can result in a shift toward less flood-tolerant vegetative communities downstream of the causeway. Direct and indirect impacts of all alternatives may be expected to proportionally affect hydrologic processes, biogeochemical processes, and habitat. The extent of such direct and indirect impacts to wetlands correlates directly to the extent of impacts to wetland functions and values. To a large degree, those alternatives with more wetland impacts would impact functions and values more and impacts to higher quality wetlands will likely have a disproportionately greater impact to functions and values for the watershed.

While Alternative 4, as proposed, is anticipated to impact up to 93 acres of wetlands, it is generally understood that the road upgrades includes changes to the various stream crossings that may improve the connectivity of water flow associated with the roadway and potentially improving the resources in the those areas. Though detailed analysis was not performed to assess improvement, it appears likely that modifications to the existing roadway and/or the railway that parallels Route 460 could help to address some of the current issues of hydrologic connectivity which were the result of construction of the infrastructure. Though design features can mitigate environmental impact of the project, avoiding impact to new area is desirable.

This project will result in significant direct and indirect impacts to aquatic resources, including the quality of downstream waters, portions of which are already identified as impaired by the state, and for the larger watersheds. Research has documented that streams, including headwaters, are connected to and have important functions related to downstream waters. These streams supply freshwater, transport sediment and organic matter, transform nutrients, and provide habitat for many species, all of which maintains downstream water quality and quantity. Wetlands associated with streams and rivers are integral with these systems and have substantial influence on downstream waters by affecting the timing of water flow, trapping and reducing nonpoint source pollutions, exchanging biological species and supporting unique, wetland

dependent plant and animal communities. These functions contribute to overall wetland and water quality and supports aquatic life in the receiving streams.

Increased impervious surfaces and subsequently increased pollutant loads and storm flows from the alternatives will potentially degrade the wetland and streams functions and values locally and for the watersheds which these aquatic resources drain. In addition to the direct impacts to wetlands and streams, the indirect effects to the remaining aquatic resources in the design corridor, and the associated downstream impacts, the cumulative loss of hundreds of acres of wetlands coupled with the introduction of a pollutant source, will permanently and adversely impact the surrounding wetlands and downstream water quality.

Wetlands and the associated aquatic systems provide habitat, supporting plant and animal communities and providing wildlife corridors that add to overall biodiversity. The direct impacts of wetland loss and habitat fragmentation and the cumulative loss of hundreds of acres of wetlands, coupled with the introduction of a pollutant source, will permanently and adversely impact the ability of these aquatic resources to provide habitat. Other potential indirect impacts to the aquatic system may include dust from construction activities, noise, shading, introduction of invasive species, and disturbance due to temporary construction staging. Noise, dust, fragmentation, and invasive species can alter the plant and animal communities. Indirect impacts to wetlands and streams from construction activities, traffic operation, and maintenance as well as from secondary growth and development have the potential to impact the wetlands and streams miles downstream, potentially to the critical bay and estuary resources. These indirect impacts should be further evaluated in the FSEIS once the preferred alternative is chosen.

Impacts to Adjacent Resources

An indication of scope of potential indirect impacts to aquatic systems is demonstrated through an analysis of the potential impacts to resources that adjoin resources within the Design Corridor ("adjoining resources"). These adjoining resources may be compromised and susceptible to degradation due to proximity to the disturbed or filled systems. Disruption of hydrology, influx of potential contaminants, and susceptibility to invasive species are potential impacts. Table 4.4-1, in the DSEIS, summarizes wetlands as identified by photo-interpretation within the 500 foot Inventory Corridor which includes, and extends beyond the Design Corridor. The wetlands reported within the Inventory Corridor (wetlands that are immediately adjacent and connected to the wetland systems and complexes that are in the design corridor) range from 959 acres to 1,279 acres of wetlands for the alternatives, except for Alternative 4 which contains 560 acres. Similarly, Table 3.4-6 summarizes the lengths of streams identified by photointerpretation within the 500 foot inventory corridor. The streams reported within the Inventory Corridor (streams connected to the stream systems and complexes that are in the design corridor) range from 84,971 linear feet of stream channel for Alternative 4 and 100,830 to 142,942 for the remaining alternatives with Alterative 1 as the highest amount. It is reasonable to assume that the respective alternatives may affect and impact these resources indirectly as they are within close proximity of the alignments. Alternative 4, however, may potentially improve the flow of water as the additional bridging, updating of conveyances, stormwater Best Management Practices (BMPs), and improvement of connectivity could result in a net environmental improvement.

Indirect Impacts - Induced Growth

The DSEIS incorporates the North Carolina Department of Transportation's guidelines for indirect and cumulative effects analysis. This approach allows for analysis of potential impacts identified at a specific distance from designated interchanges where induced growth may occur. The induced growth area encompasses the area within one mile of the interchange in addition to feeder roads leading to the interchange. The induced growth area associated with the feeder road includes a 1,000 foot buffer extending from the intersection for two miles. The DSEIS states that the full analytical methods were not used as the large amount of required natural resource data within the study area were not gathered. The analysis offers narrative responses reporting the potential cumulative impacts of which the majority of reported impacts are generally characterized as "limited" in Table 4.3-6. However, the document does offer the following figures for relative comparison including: within the induced growth zone, Alternatives 1, 3, 5N and 5S show approximately 14,000 acres of wetlands; Alternative 3 has 813,092 linear feet stream channel; Alternative 1 will impact the largest number of streams at 241. The information provided in the DSEIS figures indicate that there is a significant amount of resource at risk due to induced growth. Alternative 4 is not anticipated to have induced growth. Given the potential scope and scale of impacts, it is unclear how the potential impacts related to induced growth are considered relatively "limited". These impacts should be considered when determining the preferred alternative and the effect it will have on the local environment.

Aquatic Resource Quality/Functional Assessment

The majority of wetland discussion within the DSEIS focuses on the quantity of potential impacts to wetlands. This is partly due to the understanding that undertaking an assessment of the quality of the vast number of wetlands associated with each alternative was not practical within the time frame for completing the analysis. Efforts were undertaken to classify affected wetlands according to relative quality, in recognition of the fact that some of the wetland communities in the alternative alignments are considered to be higher quality wetlands (particularly those wetland systems that are defined by Virginia as such). These wetlands include the bald cypress and tupelo dominated swamp forest systems that occur within the study area. Using this limited assessment of wetland quality, the amount of high quality wetlands is stated in the DSEIS to range from 26 acres for Alternative 4 up to 117 acres for Alternatives 1 and 5N. However, the consideration of bald cypress-tupelo wetlands as the only high value system may be too limited and additional high value resources are believed to be present in the study area. EPA recommends that the FSEIS include additional analysis of the wetlands and identify the high value wetlands that are affected and expand the category beyond just the bald cypress-tupelo communities.

One of the major features of the wetland characterization that is missing in any discussion is ecological context. Depending on the particular wetland, the whole may be more than the sum of the parts. The inter-relationship of wetland communities, with drier wetlands and even uplands, may prove ecologically significant. Given the current state of the science there are options that can be used to increase this knowledge base. Options available include, for example: a Level 1 (GIS-based) analysis (e.g., WetCAT), several rapid assessment (Level 2) protocols (including those used by VIMS as well as the Delaware Rapid Assessment Procedure)

or Level 3 (e.g., Hardwood Flats HGM-based Guidebook; Delaware Comprehensive Assessment Procedure) which are more detailed. Accurate assessment of the resources' functions, and accurately defining the complexity of the ecological system, is critical groundwork for evaluating potential loss and impacts. Consideration of landscape setting, micro-topography, hydrology and surrounding interdependent systems are relevant to establishing the system's functions and values.

EPA reviewed a previously submitted documentation supporting a Joint Permit Application (JPA) for a CWA Individual Permit (IP) for the US Route 460 Corridor Improvements Project as submitted by US 460 Mobility Partners, LLC dated September 30, 2013. This document focused on the current Alternative 1 and has subsequently been withdrawn. Using the site-specific information, EPA suggests that, of the wetlands identified potentially half (or more) of the wetlands may be performing ecological functions at a relatively high level for the watersheds and associated wetland systems and complexes. While this inference was done for the wetlands for what is currently Alternative 1, it serves as a proxy for the other alternatives as they are crossing the same watersheds following similar geographic orientations. We strongly recommend that further in-the-field analysis should be conducted for the FSEIS or any future CWA 404 permit application for the preferred alternative.

Also, while up to half of the wetland resources in the study area may be classified as high value, the remainder perform important functions in the watershed. Loss or impairment of these resources could further compromise biological, chemical and physical functions important to the ecosystem and to the public. Existing and potential new stressors on these systems should be considered and evaluated to determine if minimization of impacts, mitigation and functional lift is possible.

Water Quality -TMDLs

Construction of the alternatives would result in a permanent increase in impervious road surface. The introduction of and/or increase in runoff of heavy metals, inorganic salts, herbicides, aromatic hydrocarbons and suspended solids washed off the roadway by stormwater runoff during events of rainfall or snowmelt can occur once in operation. Sedimentation and heavy equipment fluid leaks may impact the receiving waters during construction. Alternative 1 and 3 will have the largest increase in impervious surface, whereas Alternative 4 is expected to have the least amount of water quality impairments. The DSEIS references baseline monitoring stations within the study area and pointed out that these stations do not collect for all potential roadway impairments but did acknowledge that there is the potential to monitor for heavy metals and total suspended solids (TSS). The DSEIS did not assess the potential impact of the alternatives with regard to water quality impacts resulting from the runoff associated with active roadways. EPA recommends that the FSEIS provide an analysis for the preferred alternative of impacts to the receiving waters as well as the anticipated contaminants originating from the roadway and proposed BMPs to mitigate such impacts.

The DSEIS lists impaired waters within the study area from the 2012 303(d) Priority List of Impaired Waters. The Alternatives cross ten 12 digit Hydrologic Unit Code (HUC-12) watersheds in the Chowan/Albemarle Basin and one HUC-12 watershed in the James River

watershed. Table 3.4-3 in the DSEIS shows that the majority of impairments in the James River watershed include bacteria, benthics, and dissolved oxygen. The largest causes of impairments within the Albemarle-Chowan Basin include mercury in fish tissue, dissolved oxygen and bacteria. The total linear feet of impaired waters crossed by the alternatives ranges from 6,022 feet for Alternative 4 to 18,299 feet (Alternatives 5N and 5S). Alternatives 1 and 3 and the bypasses of Alternatives 2 and 5 will introduce new sources of roadway runoff, and Alternative 5 will more than double the existing pavement surface currently serving as a source of runoff to receiving impaired waters. The DSEIS however does not analyze the potential impacts from the alternatives to further impair these listed water bodies. EPA recommends the FSEIS incorporate an analysis of the potential for the preferred alternative to either cause additional impairment to water quality and/or further degrade the already impaired water bodies.

The DSEIS does not discuss or demonstrate how the proposed project will meet the Total Maximum Daily Load (TMDL) allocations that have been established for impaired waters that would be affected, offset any new or increased discharges or loads, or limit additional impairment of the water bodies as a result of the impacts associated with the construction of the roadway and additional stormwater runoff during operation. EPA recommends the preferred alternative address consistency with allocations for the Chesapeake Bay TMDL associated with impacts within the James River watershed, and other relevant TMDLs associated with the project area, for construction and operation of the roadway. The lead agencies should additionally state how the project will address the goal of restoration, protection and maintenance of resources in the Chesapeake Bay as directed by Executive Order 13508.

Drinking Water

The DSEIS identifies three drinking water supplies that have potential land-use changes due to the proposed project within the watersheds. The impacts to Lake Meade, Lake Prince, and Western Branch range from 152 acres of change (Alternative 2) to 448 acres (Alternative 3 and 5N). Alternative 1, 3, 5N and 5S have the potential to impact approximately 0.5 acres of Lake Meade directly. EPA recommends that the FSEIS address this issue further if the preferred alternative affects Lake Meade directly even if the intake is not downstream of the affected area. The DSEIS also identifies groundwater wells within 1,000 feet of the proposed alternatives. The wells identified could be impacted by hydrocarbon contamination from asphalt surfaces and vehicle exhaust. Alternative 4 has the most wells, which are mostly municipal sources. EPA suggests that the FSEIS further analyze and suggest ways to protect and/or mitigate for potential impacts to these drinking water sources.

Stormwater Management

The DSEIS makes references to stormwater management (SWM) throughout the document but does not go into detail with regard to the individual alternatives. EPA suggests that FSEIS include for the preferred alternative a preliminary design for SWM, including potential design and locations for proposed facilities. A green infrastructure approach is recommended (please consider information included in the EPA website located at: http://water.epa.gov/infrastructure/greeninfrastructure/index.cfm). EPA discourages any use of waters of the U.S. for stormwater treatment. Numerous studies have shown that siting these

facilities in wetlands leads to the degradation of aquatic ecosystems by contributing to thermal pollution and downstream warming. Retaining stormwater and changing the natural flow rate will alter the natural level of the water table and change the surrounding wetlands vegetation. Stormwater management structures in wetlands will not prevent pollutants such as fertilizers, pesticides, spills, sediment, and urban contaminants such as bacteria, heavy metals and petroleum from automotive activities, from entering the surface waters since the structures are already in the surface water. Moreover, an in-stream stormwater management and water quality treatment facility will alter hydrology, and potentially increase erosion and sedimentation rates.

Where appropriate, consideration should be given to low impact development (LID). LID incorporates environmentally and economically beneficial landscape practices designed early in project development to address stormwater management.

Flood Prone Areas

The SEIS identifies flood prone areas along Route 460 that could be addressed through the upgrade of the existing alignment. The Norfolk-Southern rail line runs parallel and, for most of the corridor, in close proximity to the south of the existing Route 460. The rail line embankment is above the elevation of the roadway and effectively acts as a dam by backing up stormwater due to a limited number of conveyances through the embankment. This situation causes an adverse impact of the flow of stormwater from the north side of Route 460 to the south side of Route 460. The DSEIS describes the efforts made to work with Norfolk Southern to reduce the damming effect of the rail line. EPA supports continued efforts and suggests that the coordination goals be included in the Final SEIS along with the preferred alternative. To address the flooding issues in Zuni, the bridge and roadway would need to be elevated on alignment to cross the Blackwater River or the community would need a bypass at proper elevation that could be utilized during floods. The analysis should acknowledge that removal of wetlands and their attenuation functions as a result of the proposed project may exacerbate storm and flood water issues. We recommend that the lead agencies consider if further avoidance and minimization of impacts is needed to support maintaining community resiliency.

Floodplain and Section 10 Waters

All of the alternatives span floodways and encroach upon the 100-year floodplain. Alternative 4 contains 49.5 acres within the floodplain. The other alternatives range from 80 acres to 131.5 acres within the floodplain. Impacts within the floodplain should be considered when choosing the preferred alternative for the FSEIS. This is especially important for the sections of roadway that may be susceptible to sea level rise and already have documented flooding issues. Additionally, the alternatives propose impacts (especially to wetlands) and landscape changes to the study area that decreases the ability of the surrounding area to handle stormwater and floods. EPA suggests, based on the chosen preferred alternative, that the floodplain impacts be reevaluated in the corridor to determine if further avoidance, minimization or mitigation could be accomplished.

The Blackwater River is listed on the Virginia Scenic Rivers Act of 1970 which protects rivers and segments of rivers in Virginia which possess scenic, recreational, and/or historic

values. Alternatives would have an effect on the river by adding an additional bridge spanning the river for Alternatives 1, 2N, 2S, 3, 5N and 5S. The temporary impacts resulting from the construction of the new crossing would be deforestation and potential water quality changes from increased runoff. Alternative 4 would have less impact on the river as it would use the existing bridge and not add an additional crossing.

Wildlife and Habitat- Exceptional Resources

The habitat diversity within the study area varies greatly. The Virginia Department of Conservation and Recreation-Natural Heritage Program (VDCR-NHP) has identified areas within the alignments through categorical ranking of biodiversity. These rankings found in the alignments are Category 2 and 3 within the VDCR-NHP database, indicating high biodiversity. Category 2 sites have very high biodiversity significance with excellent example of a rare community type or occurrence of a species that is either globally, very rare, or rare to uncommon. Category 3 sites have a high significance for biodiversity and contain an excellent example of any community site and good occurrence of a rare or uncommon species.

Alternative 3 has the potential to bisect and impact 62 acres of the Disputanta Conservation Site. This direct loss and fragmentation of habitat could impact the globally-rare sun-facing coneflower (*Rudbeckia heliopsidis*). Alternatives 1, 2N, 2S, and 4 have the potential to impact the Manry Wakefield Conservation Site. Alternative 1 would impact 39 acres, bisecting the site, and result in direct habitat loss, habitat degradation, fragmentation, and potentially disruption of wildlife movement. The other alternatives (2N and 2S) impact the site by approximately 1 acre each. Alternative 1 also has the potential to impact 19 acres of the Zuni Pine Barrens Conservation Site. The preserve contains 23 rare plant and animal species. All of the alternatives impact the Antioch Swamp and add to fragmentation as they each cross the area at least twice. Alternative 4 crosses the area twice and impacts 5 acres; Alternatives 1 and 3 each cross the area three times and impact 10 and 9 acres, respectively.

The study area contains a variety of aquatic habitat including coastal plain streams, stream swamp systems, ponds and rivers containing a wide diversity of fish species. Ninety-seven species are known to occur, or have the potential to occur, in the study area. All fisheries in the study area are warmwater fisheries. While intermittent streams located in the study area typically do not support permanent populations of fish, they provide seasonal breeding grounds for some fish species and temporary refuge for juveniles. Additionally, intermittent streams are important to fish resources primarily as seasonal sources of water and nutrients delivered downstream to more suitable fish habitats. Intermittent stream channels contribute nutrients to downstream reaches from primary production and leaf litter. Of the estimated 100 water-dependent of waterfowl species that could potentially exist within the study area, only 18 of these species have been observed within the study area. The American bittern and northern harrier are the only water-dependent migratory bird species observed within the study area that are listed as "Species of Management Concern." These species are reported to have "dependence on vulnerable or restricted habitats". EPA recommends that the FSEIS contain a detailed analysis of the effect of the preferred alternative on the aquatic habitat and the resulting impact to the fisheries.

The loss of and fragmentation of habitat, as discussed throughout, could potentially have impact on federally listed threatened and endangered (T&E) species that have been documented in cities and counties within the study area based on the parameters of the Virginia Department of Game and Inland Fisheries (VDGIF) database search results. These include the Northern Long-eared Bat (*Myotis septentrionalis*) which is a candidate species for listing as endangered, Bald Eagle (*Haliaeetus leucocephalus*) which has been recently delisted but protected under the Bald and Golden Eagle Protection Act, and Red-Cockaded Woodpecker (*Picoides borealis*). The state-listed protected species that have been documented in cities and counties within the study area are as follows: Rafinesque's Eastern Big-Eared Bat *(Corynorhinus rafinesquii macrotis),* Dismal Swamp Southeastern Shrew *(Sorex longirostris fisheri),* Loggerhead Shrike *(Lanius ludovicianus),* Barking Tree Frog *(Hyla gratiosa),* Mabee's Salamander *(Ambystoma mabeei), Canebrake Rattlesnake (Crotalus horridus atricaudatus),* Blackbanded Sunfish *(Enneacanthus chaetodon),* and Henslow's Sparrow *(Ammodramus henslowii).* Additional species were identified by VDGIF but it is anticipated that these species will not be impacted as no occurrences are reported or suitable habitat is not found within the alignments. Avoidance of direct and indirect impact to T&E species and habitat should be prioritized and should inform alternative selection and design.

Recommendations and Mitigation

EPA recommends a range of options from the Alternatives analyzed be considered when selecting a preferred alternative. Suggestions include Alternative 4 or modifications to the existing roadway alignment, including localized improvements or upgrades, and/or one or two bypasses. It has been demonstrated that certain areas, including the community of Zuni, require infrastructure improvement to address flooding issues. Inclusion of the bypass around the community of Zuni to alleviate a primary flooding and evacuation issue near the Blackwater River has been proposed. The bypass around Zuni is reported to impact 34 acres of wetlands. Alternatively, the roadway in this area could be raised out of the flood plain as proposed by alignment upgrades associated with Alternative 4 thereby impacting 2 acres of wetlands, but would impact more private properties. An appropriate rationale and determination of practicability should be provided with the selection of the preferred approach.

EPA encourages additional considerations be made for avoidance and minimization of impacts to waters of the U.S. during design. This includes additional bridging and avoiding and minimizing overall impacts with special emphasis on high value resources which provide high function and value to the wetland systems and complexes and to the watersheds.

The study suggests that compensation will occur utilizing credit ratios from mitigation banks. The mitigation ratios show that between 174 acres for Alternative 4 up to approximately 1,200 acres for Alternatives 1, and 5N and 5S would be required. It is unclear if this amount of mitigation credit is available in the watersheds, and the "ratios" being applied may be inappropriate. Given the extent and quality of potentially impacted aquatic resources associated with the proposed project, effective mitigation for most alternatives appears likely to be extremely difficult.